



US009839270B2

(12) **United States Patent**  
**Howell et al.**

(10) **Patent No.:** **US 9,839,270 B2**  
(45) **Date of Patent:** **Dec. 12, 2017**

(54) **DEVICE DISPENSING APPARATUS**

2575/3218 (2013.01); B65D 2575/3245  
(2013.01); B65D 2585/545 (2013.01)

(71) Applicant: **BRIGHAM YOUNG UNIVERSITY**,  
Provo, UT (US)

(72) Inventors: **Larry Howell**, Orem, UT (US);  
**Spencer Magleby**, Provo, UT (US);  
**Holly Greenburg Nihipali**, Davie, FL  
(US); **Samuel Wilding**, Springville, UT  
(US)

(73) Assignee: **Brigham Young University**, Provo, UT  
(US)

(\*) Notice: Subject to any disclaimer, the term of this  
patent is extended or adjusted under 35  
U.S.C. 154(b) by 110 days.

(21) Appl. No.: **14/754,050**

(22) Filed: **Jun. 29, 2015**

(65) **Prior Publication Data**

US 2015/0296943 A1 Oct. 22, 2015

**Related U.S. Application Data**

(63) Continuation of application No. 13/572,616, filed on  
Aug. 11, 2012, now Pat. No. 9,067,720.  
(Continued)

(51) **Int. Cl.**  
**A45C 11/00** (2006.01)  
**A45C 13/34** (2006.01)  
(Continued)

(52) **U.S. Cl.**  
CPC ..... **A45C 11/005** (2013.01); **A45C 13/005**  
(2013.01); **A45C 13/02** (2013.01); **A45C 13/34**  
(2013.01); **B65D 75/326** (2013.01); **B65D**  
**81/22** (2013.01); **B65D 83/00** (2013.01); **B65D**

(58) **Field of Classification Search**  
CPC ..... A45C 11/005; A45C 13/005; A45C 13/02;  
A45C 13/34; A61L 12/086; B65D  
2585/545; B65D 75/366; B65D 2575/367;  
B65D 75/326; B65D 8/22; B65D 30/00;  
B65D 2575/3218; B65D 2575/3245  
USPC ..... 206/5.1, 249, 250, 817, 751-752, 754,  
206/767  
See application file for complete search history.

(56) **References Cited**

U.S. PATENT DOCUMENTS

1,153,963 A 9/1915 Sengstock  
1,732,214 A 8/1927 Amez-Droz  
(Continued)

*Primary Examiner* — Chun Cheung

(74) *Attorney, Agent, or Firm* — Brake Hughes  
Bellermann LLP

(57) **ABSTRACT**

In one general aspect, an apparatus can include a container including a lid, and a cradle configured to support a device. The apparatus can include a lifting mechanism operably coupled to the cradle and the lid. The lifting mechanism can be configured to move between a storage position where the cradle is disposed in the container to a dispensing position where the cradle is disposed outside of the container. The lifting mechanism can be configured to move between the storage position and the dispensing position in response to moving the lid. The lifting mechanism can include a first link aligned parallel to a second link when the lifting mechanism is in the dispensing position and when the lifting mechanism is in the storage position. The first link and the second link can both be within the same plane when in a position between the storage position and the dispensing position.

**21 Claims, 4 Drawing Sheets**

